IN THE CLAIMS

1. (previously amended) A tunable frequency-converting device for generating an emerging optical beam having a first frequency from an incident optical beam having a second frequency comprising:

a crystal with a non-linear optical property having a curved input surface for receiving the incident optical beam ensuring substantially normal incidence of the incident optical beam, and a curved output surface for transmitting the emerging optical beam, the crystal or the incident optical beam being rotatable around an axis of revolution, which is perpendicular to a normal to the input surface, for tuning the frequency of the emerging optical beam; and

an optical system for confining and focussing said incident optical beam through the crystal via the input surface and a central portion of said crystal, and for collimating and directing said emerging optical beam from the output surface.

2. (previously amended) The device according to claim 1, wherein said crystal has a volume selected from a cylinder volume, a cylindroid volume, a truncated cylinder volume, a truncated cylindroid volume, a partial cylinder volume, and a partial cylindroid volume.

3. (previously amended) The device according to claim 2, wherein said volume has a section selected from a circular section and an elliptical section.

4. (previously amended) The device according to claim 1, wherein said crystal includes at least one hyperpolarizable chemical entity.

5. (currently amended) The device according to claim 1, wherein said crystal is a crystal selected from a crystal of $LiTaO_3$, $KTiOPO_4$, $KTiOAsO_4$, $RbTiOPO_4$, $RbTiOAsO_4$, $CsTiOAsO_4$, $\underline{\beta.BaB_2O_4}$ $\cancel{\beta.Ba_2BO_4}$, LiB_3O_5, $KNbO_3$, $LiIO_3$, $LiNbO_3$, KD_2PO_4, KH_2PO_4, $NH_4H_2PO_4$, $\underline{CsDAsO_4}$ $\cancel{CsD_2AsO_4}$, CsH_2AsO_4, $AgGaS_2$, $AgGaSe_2$, $ZnGeP_2$, Tl_3AsSe_3 and a crystal of GaAs.

6. (previously amended) The device according to claim 1, wherein said crystal is selected from a micrometric size, a millimetric size and a centimetric size.

7. (previously amended) The device according to claim 1, wherein said optical system comprises two components, placed on opposite sides of said crystal, and selected from a convergent lens, a divergent lens, a set of lenses, a reflecting surface or mirror with a concave surface facing said crystal, and a reflecting surface or mirror with a convex surface facing said crystal.

8. (previously amended) The device according to claim 1, further comprising a rotary device, which rotates about a rotary mechanical axis, for supporting the crystal, wherein the axis of revolution of said crystal coincides with the rotary mechanical axis.

9. (previously amended) The device according to claim 1, wherein said crystal is a crystal with a phase matching property through birefringence.

10. (previously amended) The device according to claim 9, wherein said crystal is a monocrystalline crystal.

11. (previously amended) The device according to claim 1, wherein said crystal is a crystal with a quasi phase matching property.

12. (previously amended) The device according to claim 11, wherein said crystal has a periodically alternating juxtaposition of monocrystalline domains along a direction of propagation of the emerging optical beam.

13. Previously Cancelled

14. (previously amended) The device according to claim 1, wherein said crystal is accessible to said incident optical beam under substantially normal incidence on the input surface of said crystal either by rotation of said crystal around the axis of revolution, or by rotation of said incident optical beam around said crystal in a plane orthogonal to the axis of revolution of said crystal.

15. (previously amended) The device according to claim 1, wherein said incident optical beam comprises a plurality of frequencies, with colinear or non-colinear wave vectors.

16. (previously amended) The device according to claim 1, wherein said crystal has a network of monocrystalline domains selected from a network of plane monocrystalline domains, a network of circular monocrystalline domains, and a network of elliptical monocrystalline domains.

17. (previously amended) The device according to claim 1, wherein said crystal has a network of periodically alternating domains, optionally surrounded by a non-alternating monocrystalline crown.

18. (currently amended) The device according to claim 1, further comprising at least one additional incident optical beam; wherein each of said additional incident optical beams are ~~beam is~~ ~~a~~ laser beams ~~beam~~, comprising one or more laser beams selected from a fixed frequency laser beam and a tunable frequency laser beam.

19. (previously amended) The device according to claim 1, wherein an interaction between electro-magnetic waves from the incident and emerging optical beams is a three-wave interaction or a four-wave interaction.

20. (previously amended) The device according to claim 19, wherein said crystal has a non-centrosymmetric structure so that said crystal provides a three-wave interaction.

21. (previously amended) The device according to claim 19, further comprising at least one additional incident optical beam, and at least one additional emerging optical beam; wherein said incident optical beams comprise frequencies for a three-wave interaction, or three frequencies for a four-wave interaction, and wherein at least one of said emerging optical beams comprise a frequency which corresponds to the sum of said two, or said three frequencies comprised in said incident optical beams.

22. (previously amended) The device according to claim 1, wherein said first frequency is equal to the double or the triple of the second frequency.

23. (previously amended) The device according to claim 19, further comprising at least one additional incident optical beam, and at least one additional emerging optical beam; wherein said incident optical beams comprise two frequencies for a three-wave interaction, or three frequencies for a four-wave interaction; and wherein at least one of said emerging optical beams comprise a frequency, which corresponds to a difference between said two, or said three frequencies comprised in said incident optical beams.

24. (previously amended) The device according to claim 19, wherein said emerging optical beam comprises two frequencies for a three-wave interaction, or three frequencies for a four-wave interaction, the sum of which is equal to a frequency comprised in.

25. (previously amended) The device according to claim 19, wherein said interaction is an interaction with colinear wave vectors.

26. (previously amended) The device according to claim 19, wherein said interaction is an interaction with non-colinear wave vectors.

27. (previously amended) The device according to claim 19, wherein said interaction is an interaction selected from an optical parametric amplification, and a generation of second or third harmonic.

28. (previously amended) The device according to claim 19, wherein said crystal is placed inside a cavity providing a resonant interaction, and wherein said optical system is placed outside said cavity.

29. (previously amended) The device according to claim 28, wherein said resonant interaction is an interaction with three or four waves selected from an optical parametric oscillation, an optical parametric amplification, and a generation of second or third harmonics.

30. (previously amended) The device according to claim 28, wherein said cavity includes input and output reflecting surfaces facing each other providing resonance for at least one of the interacting waves.

31. (previously amended) The device according to claim 30, wherein said input reflecting surface is selected from a plane reflecting surface and a reflecting surface having a radius of curvature, with a concave surface facing said crystal or a convex surface facing said crystal, in order to optimize the oscillation threshold and the stability of the cavity.

32. (previously amended) The device according to claim 30, wherein said at least one resonant wave has a non-zero double refraction angle ρ, and wherein said output reflecting surface has a concave surface facing said crystal or a convex surface facing said crystal, so that the outgoing and returning beams coincide.

33. (currently amended) The device according to claim 30, wherein said at least one resonant wave has a non-zero double refraction angle ρ, and wherein said output reflecting surface is placed at a distance d from said crystal and has a radius of curvature R, the respective values of which satisfy equation R = d - L with d larger than L for a concavity orientated on <u>one</u> ~~the~~ side of said crystal, or the equation R = L - d with d less than L for a concavity orientated on the opposite side of said crystal, with L defined as $L = R_c (\cos(2\rho) + (\sin(2\rho) / \tan(\rho_e)) - 1)$, with R_c the radius of the cylindrical volume of revolution, ρ the double refraction angle and with ρ_e defined by $\rho_e = \arcsin(n \sin(2\rho) - 2\rho)$, with n being the refractive index of said at least one wave for which resonance is sought.

34. (previously amended) The device according to claim 30, wherein said at least one resonant wave has a zero double refraction angle ρ, and wherein said output reflecting surface is selected from a plane reflecting surface and a reflecting surface having a radius of curvature, with a concave surface facing said crystal or a convex surface facing said crystal in order to optimize the oscillation threshold and the stability of the cavity.

35. (previously amended) The device according to claim 1, further comprising means for thermostatic control of said crystal.

36. (previously amended) The device according to claim 1, wherein said crystal is held at a temperature different from room temperature.

37. (previously amended) The device according to claim 1, further comprising means for applying a static or low frequency electric field to the inside of said crystal.

38. (previously amended) The device according to claim 1, further comprising a pair of electrodes placed on opposite faces of said crystal.

39. (currently amended) The device according to claim 1, wherein the device forms a component selected from a spectroscope component, a remote detection system component, a remote transmission system component, a remote guiding system component, a LIDAR system component, and an optronic counter-measure system component.

40. Cancelled